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(54) Title of the Invention: Excreta Treatment Material for Pets

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SPECIFICATION

1. Title of the Invention

Excreta Treatment Material for Pets

2. Claims

1. An excreta treatment material for pets, produced by coating the surface of granules of a water-absorbent material 1 to 7 mm in size with a powder that is capable of coagulating and swelling and that is finer than 150 mesh, in a coating thickness of 10 to 500 μ.

2. The excreta treatment material for pets according to Claim 1, wherein the granules of water-absorbent material are composed of pulp, zeolite, sepiolite, and wood flour.

3. The excreta treatment material for pets according to Claim 1, wherein the fine powder capable of coagulating and swelling is composed of bentonite.

4. The excreta treatment material for pets according to Claim 1, wherein the size of the granules is 2 to 5 mm.

5. The excreta treatment material for pets according to Claim 1, wherein the bentonite powder has a fineness of 200 mesh or less.

6. The excreta treatment material for pets according to Claim 1, wherein the film thickness produced by the bentonite powder is 50 to 150 μ.

7. The excreta treatment material for pets according to Claim 1, wherein the size of the granules is 2 to 5 mm, the bentonite powder has a fineness of 200 mesh or less, and the film thickness produced by the bentonite powder is 50 to 150 μ.

3. Detailed Description of the Invention

Field of Industrial Utilization

The present invention relates to a novel material for treating the excreta of pets.

Prior Art

Many different water-absorbent granules such as pulp, zeolite, and wood flour have been proposed in recent years as materials for treating the excreta of pets and so forth.

However, since it is difficult to distinguish granules that have absorbed liquid from those that have not, the removal of granules that have absorbed liquid does not proceed smoothly, and the granules that have not absorbed any liquid may also end up being removed, or the granules may lose their shape. Also, even if granules that have absorbed liquid can be distinguished by a change in color, it is quite an arduous task to remove one at a time of granules that have a diameter of approximately 0.2 to 20 mm and have absorbed liquid.

Problems Which the Invention is Intended to Solve

In view of the above-mentioned drawbacks to conventional excreta treatment materials for pets, it is an object of the present invention to provide a novel excreta treatment material for pets with which the above drawbacks can be eliminated without in any way sacrificing the advantages of conventional treatment materials.

Means Used to Solve the Above-Mentioned Problems

As a result of diligent research, the inventors perfected the present invention upon discovering that the desired effect can be obtained by covering the surface of granules of a water-absorbent material with a fine bentonite powder that is capable of coagulating and swelling.

Specifically, the present invention provides an excreta treatment material for pets, produced by coating the surface of granules of a water-absorbent material such as pulp, zeolite, wood flour, and sepiolite approximately 1 to 7 mm in size, and preferably approximately 2 to 5 mm in size (diameter) with a bentonite powder that is capable of coagulating and swelling and that is finer than 150 mesh, preferably finer than 200 mesh, in a coating thickness of 10 to 500 μ, preferably approximately 50 to 150 μ.

With the treatment material pertaining to the present invention, only those portions that have absorbed liquid clump together into a cake, and the more favorable are the conditions, the harder these clumps become, so that these coagulated clumps can be picked up and disposed of, and the granules replenished with a corresponding amount of new material.

Further, if the core of the treatment material of the present invention is pulp or another such material that can be dissolved or dispersed in water, then [the clumps] can be flushed down a toilet the same way as with conventional products, without the bentonite coating applied in the present invention posing any problem whatsoever.

The size (diameter) of the core granules is approximately 1 to 7 mm, and preferably approximately 2 to 5 mm. Granules smaller than 1 mm tend to stick to the paws of pets and soil the surrounding area, but the drawback to granules larger than 7 mm is that they do not coagulate well.

The bentonite powder is finer than 150 mesh, and preferably has a fineness of 200 mesh or less, which allows the core granules to be uniformly coated with powder. The covering material will tend to peel away from granules larger than 150 mesh, which prevents the cores from being uniformly coated.

The thickness of the coating of bentonite powder on the water-absorbent material granules is selected from a range of approximately 10 to 500 μ, and preferably approximately 50 to 150 μ. If the film thickness is less than 10 μ, the bentonite particles

will not stick together adequately and clumping will tend to be poor, but if the film thickness is over 500 μ, the film will be prone to peeling.

The excreta treatment material for pets of the present invention is produced by uniformly spraying water onto the core granules so as to thoroughly wet the surface, and mixing in the bentonite powder and immediately drying in a dryer so as to achieve rapid powder coating. For instance, a film thickness of approximately 80 μ can be obtained by coating 100 weight parts of pulp granules (5 mm in diameter) with 25 weight parts of bentonite powder. A nauta mixer, ribbon mixer, or the like can be used for powder coating and adding water. If needed, a rotary dryer or the like may be used to dry the material at about 110°C to 130°C. It is also possible to use a flow coating (made by Okawara Seisakusho) that allows water addition, powder coating, and drying to be carried out simultaneously.

Disinfectants, deodorizers, activated charcoal, perfumes, surfactants, and other such additives can also be added as needed to the treatment material of the present invention.

Examples will now be given to further clarify the present invention, but these are nothing more than examples, and are not intended to limit the scope of the present invention. All references to "parts" and "%" in the following examples are by weight unless otherwise specified.

Example 1

A rocking mixer was used to uniformly impregnate 100 parts of pulp spheres (2 to 5 mm in diameter) with 40 parts of a 1.25% aqueous solution of Zeroshu [uncertain spelling] (a deodorizer), after which 25 parts of bentonite powder (that had entirely passed through 250 mesh) was added and uniformly dispersed so as to adhere to the surface of the pulp spheres. A rotary dryer was then used to dry the material at a temperature (forced air) of 115°C and obtain a finished product.

The thickness of the bentonite powder coating of this product was 80 μ, the liquid absorption time was 29 minutes, the absorption volume was 20 cc, and the coagulation was excellent.

Example 2

200 parts of granulated wet pulp spheres (50 water content) were put into a V mixer, 5 parts of a 20% aqueous solution of Hi-Descenter (deodorizer) was sprayed from the shaft nozzle so as to thoroughly impregnate [the spheres], and then 30 parts of bentonite powder (that had entirely passed through 200 mesh) was added so as to uniformly coat the surface of the wet pulp spheres. A fluidized dryer was then used to dry the material and obtain a finished product.

The thickness of the bentonite powder coating of this product was 70 to 100 μ, the liquid absorption time was 32 minutes, the absorption volume was 21 cc, and the coagulation was excellent.

Example 3

Zeolite ore was crushed and then sifted and graded to a diameter of 2 to 7 mm. 118 parts of this material (15% water content) was put into a rocking mixer, then 20 parts bentonite powder (that had entirely passed through 250 mesh) was added and the surface [of the zeolite] was coated with the bentonite powder while the mixer rotated. Five parts of water was then sprayed into the mixture while the bentonite powder adhered to the surface of the zeolite granules. A rotary dryer was then used to dry the material at a temperature (forced air) of 160°C and obtain a finished product.

The thickness of the bentonite powder coating of this product was 50 to 100 μ, the liquid absorption time was 10 hours, the absorption volume was 40 cc, and the coagulation was very good.

Method for Measuring Film Thickness

A product was obtained by the same manner as in the examples, with either the core or the coating [of the granules] having been colored. This product was cut open and its surface photographed using an optical microscope. The film thickness was calculated by contrast with a comparative scale, and the average of five measurements was taken.

Method for Measuring Water Absorption Power

10.0 cc of water that had been colored with red ink was poured into a 100 cc graduated cylinder, the sample to be measured was quickly poured into this and lightly tapped, and until the upper line of the sample and the water reach the 50 cc line of the cylinder. The height (cc's) of the absorbed water and the amount of water remaining at the bottom of the cylinder (visual) were noted after 1, 5, and 30 minutes while using a stopwatch to keep time. If there was still water remaining on the bottom after 30 minutes, then the absorption was timed until no more water was seen on the bottom, and the absorption height at this time was also noted.

Method for Measuring Coagulation

A crystal dish 6 cm in diameter was levelly filled to the top with some of the sample, and 5 cc of water was poured onto one spot from a graduated pipette. 20 minutes later the crystal dish was turned upside down on paper, and the condition of the contents was examined.

If the contents had thoroughly coagulated, the rating was excellent. If there was some coagulation, the rating was good, and coagulation in between these two was rated very good. If there was no coagulation at all, the rating was poor.

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